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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/771,137	01/24/2001	Bruce A. Judson	PA000220	6736

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Qualcomm Incorporated
Patents Department
5775 Morehouse Drive
San Diego, CA 92121-1714

EXAMINER	
URBAN, EDWARD F	

ART UNIT	PAPER NUMBER
2685	

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/771,137	JUDSON, BRUCE A.	
	Examiner	Art Unit	
	Duy K Le	2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 July 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *24-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *24-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 22, 2004 has been entered.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 24-25, 27, 32-37, 39, and 44-45 are rejected under 35 U.S.C. 102(e) as being anticipated by Weaver et al. (U.S. Patent 6,421,005).

As to claim 24, the Weaver reference discloses a method comprising the steps of:

forming an antenna beam pattern to communicate with a single user to the exclusion of all other users (see Col. 5, line 63 to Col. 6, line 22. "Based upon data gathered from wireless mobile units using the cylindrical antenna arrays 100, such as position and signal information (such as transmit power, for example) monitored and gathered at a remote location for example; the number of antenna components, antenna pattern, and beam configuration, beam orientation,

or even dynamic down-tilting and up-titling are easily achieved by remotely controlling controller 200" (Col. 4, lines 28-35). "For example, the controller 200 controls the cylindrical antenna array 100 to adjust beam configuration for example, by narrowing beam width of one antenna component of the cylindrical array 100 and widening beam width of another antenna component within the same cell" (Col. 7, lines 33-37). As interpreted by examiner, the position of the wireless mobile unit is used for adjustment to the antenna array ("forming/adjusting antenna beam pattern") to communicate and minimize interference to a particular user with respect to ("to the exclusion of") the other users);

determining a statistic using a control signal from the user ("based upon data gathered from wireless mobile units using the cylindrical antenna arrays 100, such as position and signal information (such as transmit power, for example) monitored and gathered at a remote location for example; the number of antenna components, antenna pattern, and beam configuration, beam orientation, or even dynamic down-tilting and up-titling are easily achieved by remotely controlling controller 200" (Col. 4, lines 28-35). "By providing such location or position information along with the signal information (such as signal strength, measurements, transmit power, etc.), antenna component configuration adjustment can be made to minimize interference and call droppage and maximize coverage" (Col. 5, line 63 to Col. 6, line 1));

utilizing the statistic to narrow the antenna beam pattern ("based upon data gathered from wireless mobile units using the cylindrical antenna arrays 100, such as position and signal information (such as transmit power, for example) monitored and gathered at a remote location for example; the number of antenna components, antenna pattern, and beam configuration, beam orientation, or even dynamic down-tilting and up-titling are easily achieved by remotely

controlling controller 200" (Col. 4, lines 28-35). "By providing such location or position information along with the signal information (such as signal strength, measurements, transmit power, etc.), antenna component configuration adjustment can be made to minimize interference and call droppage and maximize coverage" (Col. 5, line 63 to Col. 6, line 1). "For example, the controller 200 controls the cylindrical antenna array 100 to adjust beam configuration for example, by narrowing beam width of one antenna component of the cylindrical array 100 and widening beam width of another antenna component within the same cell" (Col. 7, lines 33-37)).

As to claim 25, the Weaver reference discloses the method of claim 24 further comprising storing the antenna beam pattern ("in "tuning" or reconfiguring the antenna components of the cylindrical antenna array 100, neighbor sets are developed and stored in memory 220 of controller 200" (Col. 4, lines 55-57)).

As to claims 27 and 39, the Weaver reference discloses the control signal comprises a power control signal ("based upon data gathered from wireless mobile units using the cylindrical antenna arrays 100, such as position and signal information (such as transmit power, for example) monitored and gathered at a remote location for example; the number of antenna components, antenna pattern, and beam configuration, beam orientation, or even dynamic down-tilting and up-titling are easily achieved by remotely controlling controller 200" (Col. 4, lines 28-35)).

As to claim 32, the Weaver reference discloses the method of claim 24 wherein the antenna beam pattern is formed using an adaptive antenna array ("cylindrical base station antenna arrays which are initially set up based upon mathematical parameters, and which can

easily be adjusted or adapted in various ways so as to minimize interference and maximize coverage within a cell and between neighboring cells" (Col. 3, lines 35-39)).

As to claims 33 and 44, the Weaver reference discloses the communication signal is sent over a forward link of a wireless communication system ("the beam patterns 30A-C as shown in FIG. 1 dictate the area or sector from which information can be received from wireless communication units and to which information can be sent" (Col. 1, lines 28-31). As interpreted by examiner, forward link refers to transmission from the base station to a mobile unit. The beam patterns transmit information from the base station to a mobile unit).

As to claims 34 and 45, the Weaver reference discloses the wireless communication system comprises a wideband code division multiple access communication system ("to fully take advantage of the large capacity and essentially soft limit provided to wireless systems by CDMA technology for example, the load on each of the antenna components of the cell is monitored" (Col. 7, lines 25-28)).

As to claim 35, Figure 4 in Weaver shows a system comprising:

an antenna (100) configured to generate an antenna beam pattern to communicate with a single user to the exclusion of all other users (see Col. 5, line 63 to Col. 6, line 22. "Based upon data gathered from wireless mobile units using the cylindrical antenna arrays 100, such as position and signal information (such as transmit power, for example) monitored and gathered at a remote location for example; the number of antenna components, antenna pattern, and beam configuration, beam orientation, or even dynamic down-tilting and up-titling are easily achieved by remotely controlling controller 200" (Col. 4, lines 28-35). "For example, the controller 200 controls the cylindrical antenna array 100 to adjust beam configuration for example, by

narrowing beam width of one antenna component of the cylindrical array 100 and widening beam width of another antenna component within the same cell" (Col. 7, lines 33-37). As interpreted by examiner, the position of the wireless mobile unit is used for adjustment to the antenna array ("forming/adjusting antenna beam pattern") to communicate and minimize interference to a particular user with respect to ("to the exclusion of") the other users);

a control signal monitoring module (200) configured to access a control signal from the user ("the controller 200 includes a central processing unit (CPU) 210, and a memory 220. The CPU 210 receives information, such as information for reconfiguring antenna components, in a wireless manner through fixed signal 230 and/or through connections to other components which receive the position and signal information from the wireless mobile units" (Col. 4, lines 42-48));

a signal statistic computation module (200) configured to determine a statistic from a sequence of monitored signals output by the signal monitoring module ("this position and signal for a given base station is preferably received and monitored in a location remote to a controller 200 of the base station. Using this information, antenna component configuration parameters for reconfiguring antenna components of a corresponding cylindrical antenna array 100 are determined" (Col. 6, lines 1-6)); and

an antenna beam pattern optimizing module (200) configured to utilize the statistic to narrow the antenna beam pattern ("based upon data gathered from wireless mobile units using the cylindrical antenna arrays 100, such as position and signal information (such as transmit power, for example) monitored and gathered at a remote location for example; the number of antenna components, antenna pattern, and beam configuration, beam orientation, or even dynamic down-tilting and up-titling are easily achieved by remotely controlling controller 200"

(Col. 4, lines 28-35). "By providing such location or position information along with the signal information (such as signal strength, measurements, transmit power, etc.), antenna component configuration adjustment can be made to minimize interference and call droppage and maximize coverage" (Col. 5, line 63 to Col. 6, line 1). "For example, the controller 200 controls the cylindrical antenna array 100 to adjust beam configuration for example, by narrowing beam width of one antenna component of the cylindrical array 100 and widening beam width of another antenna component within the same cell" (Col. 7, lines 33-37)).

As to claim 36, the Weaver reference discloses the system of claim 35 wherein the antenna comprises an adaptive antenna array module configured to output and direct the antenna beam pattern to the single user ("cylindrical base station antenna arrays which are initially set up based upon mathematical parameters, and which can easily be adjusted or adapted in various ways so as to minimize interference and maximize coverage within a cell and between neighboring cells" (Col. 3, lines 35-39)).

As to claim 37, Figure 1 in Weaver discloses the system of claim 35 further comprising an antenna beam pattern storing module 220 configured to store the antenna beam pattern ("in "tuning" or reconfiguring the antenna components of the cylindrical antenna array 100, neighbor sets are developed and stored in memory 220 of controller 200" (Col. 4, lines 55-57)).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 26 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,421,005 to Weaver et al. in view of Densmore et al. (U.S. Patent RE37,218).

As to claims 26 and 38, the Weaver reference discloses the method of claim 24 and the system of claim 35, wherein the statistic is utilized to narrow the antenna beam pattern (see (see Col. 4, lines 28-35, Col. 5, line 63 to Col. 6, line 1, and Col. 7, lines 33-37)). However, it does not disclose using a dithering algorithm to narrow the antenna beam pattern. The Densmore reference teaches using a dithering algorithm ("the dithering algorithm referred to above involves rocking the antenna sinusoidally in azimuth angle 1 deg in each direction at a 2 Hz rate. The satellite sends a special pilot signal for antenna tracking. By correlating the received pilot signal level sensed by the receiver with the commanded dithering of the antenna angle, the antenna controller computer determines the sign and magnitude of any pointing error" (Col. 8, lines 58-65)).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method and system of Weaver to use a dithering algorithm to narrow the antenna beam pattern, as taught by Densmore, in order to dynamically adjust the beam configuration to minimize interference.

5. Claims 29-31 and 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,421,005 to Weaver et al. in view of Spaling et al. (U.S. Patent Application Publication 2002/0077111 A1).

As to claims 29 and 41, the Weaver reference discloses the method of claim 24 and the system of claim 35. However, it does not disclose the statistic comprises an average of the

control signal over a specified interval of time. The Spaling reference teaches an average of values over a specified interval of time. "An averager 202 (Figure 7) may be used optionally to average the value generated by the counter 200" (page 5, col. 2, paragraph [0046], lines 6-8). "The average is taken of values received within a certain time window" (page 5, col. 2, paragraph [0047], lines 11-12).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method and system of Weaver wherein the statistic comprises an average of the control signal over a specified interval of time, as taught by Spaling, in order to effectively smooth out any abrupt, momentary changes in values.

As to claims 30 and 42, the Weaver reference discloses the method of claim 24 and the system of claim 35. However, it does not disclose the statistic comprises a running average of the control signal. The Spaling reference teaches computing a running average. "A sliding averager 216 (Figure 8) may be used to average the value generated by the counter 210 using a sliding window technique" (page 5, col. 2, paragraph [0047], lines 7-9). "As the window "moves" in time, older values are discarded and newer values are observed" (page 5, col. 2, paragraph [0047], lines 12-14).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method and system of Weaver wherein the statistic comprises a running average of the control signal, as taught by Spaling, in order to effectively smooth out any abrupt, momentary changes in values.

As to claims 31 and 43, the Weaver reference discloses the method of claim 24 and the system of claim 35. However, it does not disclose the statistic comprises a weighted average of

the control signal. The Spaling reference teaches a weighted average. "FIG. 9 illustrates another example implementation of the invention where the transmit power control commands are "weighted" to reflect the different degrees to which those commands will likely impact the cell load/congestion condition" (page 6, col. 1, paragraph [0051], lines 1-5). "The weights are multiplied by their corresponding transmit power control command, either positive or negative. The weighted commands are selectively added in the weighted TPC command processor 302 to generate a transmit power control command "up" value and a transmit power control command "down" value" (page 5, col. 1, paragraph [0052], lines 11-16).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method and system of Weaver wherein the statistic comprises a weighted average of the control signal, as taught by Spaling, in order to reflect the different degrees each control signal measurement will likely impact the overall average value.

6. Claims 28 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,421,005 to Weaver et al. in view of Padovani et al. (U.S. Patent 6,574,211).

As to claims 28 and 40, the Weaver reference discloses the method of claim 24 and the system of claim 35. However, it does not disclose the control signal comprises a data rate control signal. The Padovani reference teaches the control signal comprises a data rate control signal "the C/I that any given user's mobile station achieves determines the information rate that can be supported for this particular link from the base station to the user's mobile station" (Col. 3, lines 9-12). "In the exemplary embodiment, at every time slot, the mobile station transmits to the selected base station on a dedicated data request (DRC) channel a request for transmission at the highest data rate which the measured C/I can reliably support. The selected base station transmits

data, in data packets, at a data rate not exceeding the data rate received from the mobile station on the DRC channel" (Col. 4, lines 34-41).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method and system of Weaver wherein the control signal comprises a data rate control signal, as taught by Padovani, in order to communicate from the mobile station to the serving base station the optimum data rate that can be supported.

Response to Arguments

7. Applicant's arguments filed July 22, 2004 have been fully considered but they are not persuasive.

With respect to the new independent claims 24 and 35, examiner refers to what is cited in the Office action.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duy K Le whose telephone number is 703-305-5660. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward F Urban can be reached on 703-305-4385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Duy Le
September 20, 2004

EDWARD F. URBAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600